



TIMMINS

**water pollution
control plant**

1968

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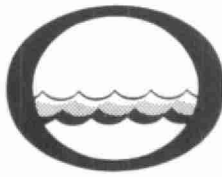
Division of Plant Operations

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Water management in Ontario

Ontario
Water Resources
Commission

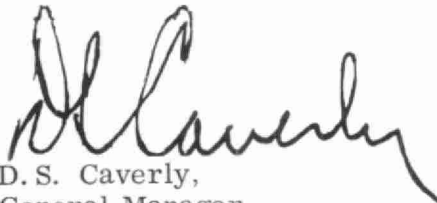
135 St. Clair Ave. W.
Toronto 7
Ontario

We are pleased to present you with the Operating Summary for the water pollution control facilities operated for you during 1968.

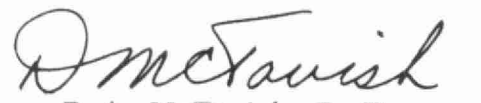
Both the financial and technical information presented should be of assistance to your present and future planning in this important phase of municipal activity.

A new format has been devised to allow greater readability with equally detailed content. We trust that this will meet with your approval.

Our staff wish to express their appreciation for your co-operation throughout the year.



D. S. Caverly,
General Manager.



D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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TIMMINS
water pollution control plant

operated for

THE TOWN OF TIMMINS

by the

ONTARIO WATER RESOURCES COMMISSION

1968 ANNUAL OPERATING SUMMARY

FOREWORD

● This operating summary outlines the project's technical capabilities and financial status in 1968. Such information mirrors past and present performance, but a major intention is to anticipate the future -- to solve problems before they occur.

The new format in which this year's data are presented is designed to offer a higher level of readability than in the past, without a corresponding decrease in compactness, accuracy and detail.

Although your Regional Operations Engineer carries the major responsibility for the contents of the report, those involved in its preparation are attached to several Commission sections and divisions. The statistics section of the Division of Plant Operations compiled the information for the graphs and charts. The draughting section of the Division of Sanitary Engineering drew the graphs. The Division of Finance provided all cost data.

Only the close co-operation of these departments allowed the publication of this summary.

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'68 REVIEW

The total operating cost for 1968 was \$54,186.55, a decrease of approximately 9.5 percent from the 1967 cost. A decrease in sludge haulage and grit removal costs, and the fact that no taxes were charged, accounted for a decrease in the cost.

A total of 933.85 million gallons was treated during 11 months of 1968. There was no flow recorded during the month of February. The average daily flow for the year was 2.93 million gallons.

The raw sewage had an average concentration of 158 mg/l BOD and 237 mg/l suspended solids. The average BOD reduction was 59 percent and the average suspended solids reduction was 74 percent.

The plant effluent was disinfected with chlorine from May 15 to October 31, with 34,390 pounds used.

A total of 8,886,000 gallons of raw sludge was pumped to the digester and 1,978,000 gallons of digested sludge were hauled from the digester by tank truck.

Generally the plant operated satisfactorily, near the average design flow of three million gallons per day. The BOD and suspended solids reductions were very good for a primary treatment plant.

The digester operation could be improved with the addition of mixing equipment. This has been proposed.

PROJECT COSTS

NET CAPITAL COST (Final)	\$785,370.12
DEDUCT - Portion Financed by CMHC-MDLB (Final)	<u>521,108.36</u>
Long Term Debt to OWRC	<u>\$264,261.76</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	\$ <u>42,762.91</u>
Net Operating	\$ 54,186.55
Debt Retirement	9,587.00
Reserve	4,651.06
Interest Charged	<u>14,836.54</u>
TOTAL	\$ <u>83,261.15</u>

RESERVE ACCOUNT

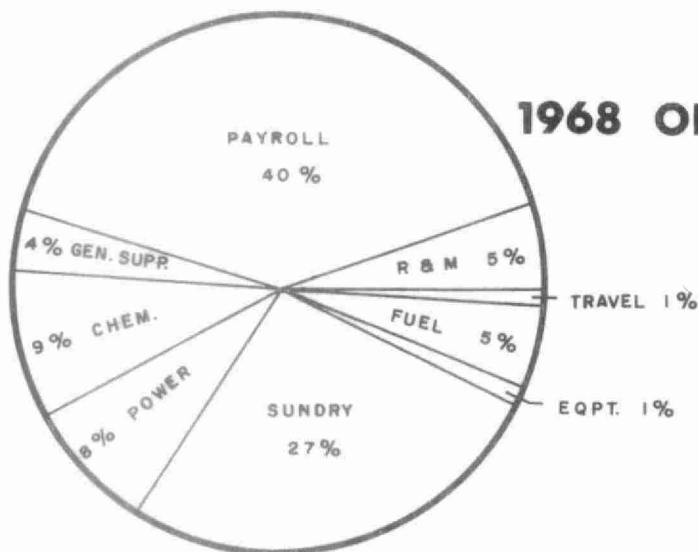
Balance at January 1, 1968	\$ 15,621.98
Deposited by Municipality	4,651.06
Interest Earned	982.58
	<hr/>
	\$ 21,255.62
Less Expenditures	<u>3,099.04</u>
Balance at December 31, 1968	\$ <u>18,156.58</u>

Monthly Operating Costs

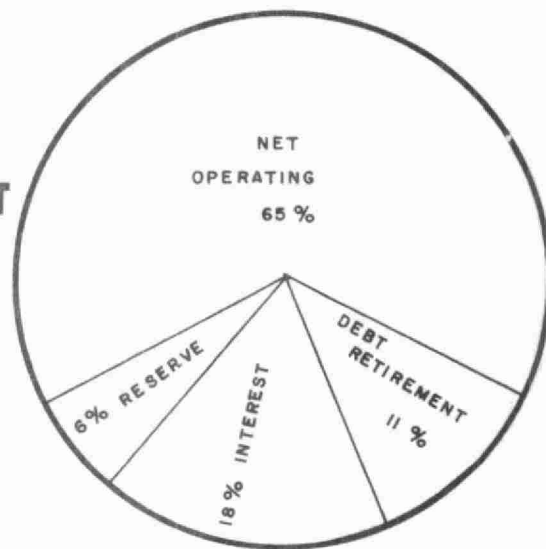
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAY ROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER	TRAVEL
JAN	1856.26	1305.34	81.62	-	332.48	-	35.67	-	21.58		-	79.57
FEB	3829.00	1257.99	-	399.97	327.13	-	61.75	-	61.30	1590.56	-	130.30
MAR	4562.86	2005.25	56.59	117.30	385.88	-	109.49	135.01	175.45	1577.89	-	-
APRIL	4571.46	1549.42	-	819.30	375.19	-	125.21	87.90	176.32	1438.12	-	-
MAY	5664.46	1203.45	64.74	670.91	337.39	1550.85	137.44	-	503.18	1165.90	-	30.60
JUNE	4376.95	1238.35	333.07	97.80	353.43	-	427.45	46.31	374.29	1475.65	-	30.60
JULY	3587.46	1221.17	178.42	317.74	364.12	-	226.84	-	187.70	1070.77	-	20.70
AUG	4145.75	1919.47	471.52	-	-	1639.05	92.14	-	-	23.57	-	-
SEPT	4515.71	1244.83	446.18	-	656.80	-	296.83	312.32	45.00	1455.75	-	58.00
OCT	5876.36	1342.69	343.41	-	336.26	1639.05	209.20	-	948.71	1057.04	-	-
NOV	3680.00	1164.48	312.74	-	338.20	-	81.63	66.62	51.95	1595.13	-	69.25
DEC	7520.28	3449.49	267.45	370.02	404.46	-	210.75	74.09	486.62	2257.40	-	-
TOTAL	54186.55	18901.93	2555.74	2793.04	4211.34	4828.95	2014.40	722.25	3032.10	14707.78	-	419.02

*SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$13,511.69

1968 OPERATING COSTS



TOTAL ANNUAL COST



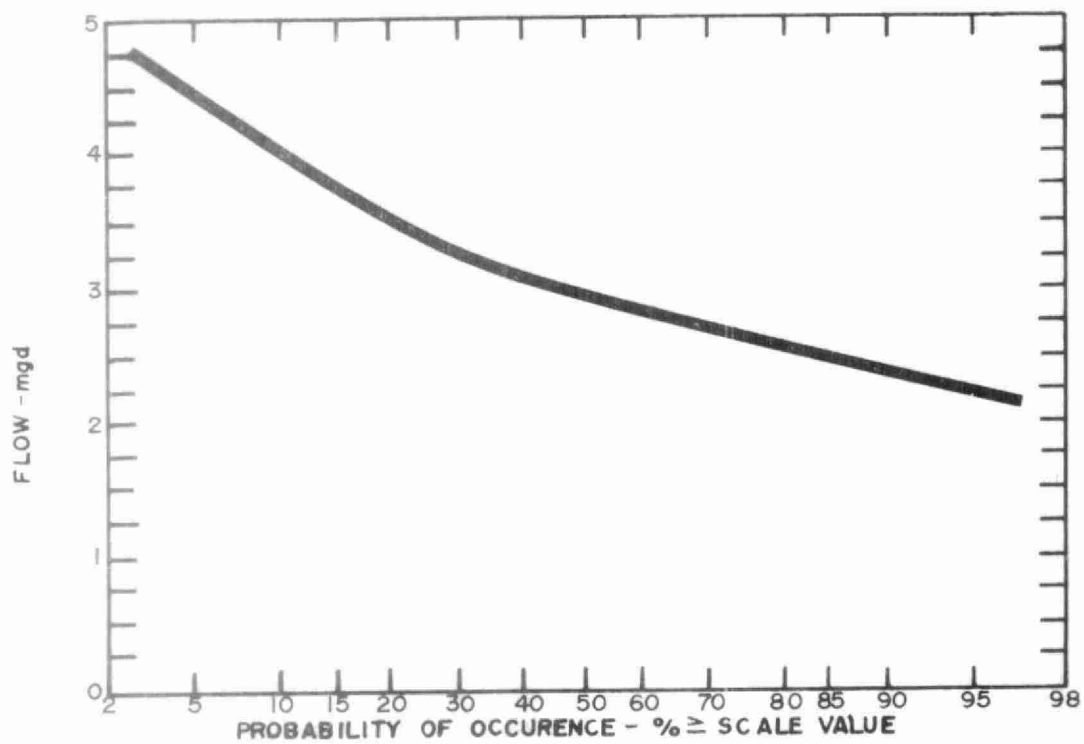
Yearly Operating Costs

YEAR	M.G.TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1965	1061,286	\$31,001.30	\$29.21	3 cents
1966	1130,981	31,647.82	27.93	2 cents
1967	1144,778	59,857.94	52.28	6 cents
1968	933,85	54,186.55	58.03	6 cents

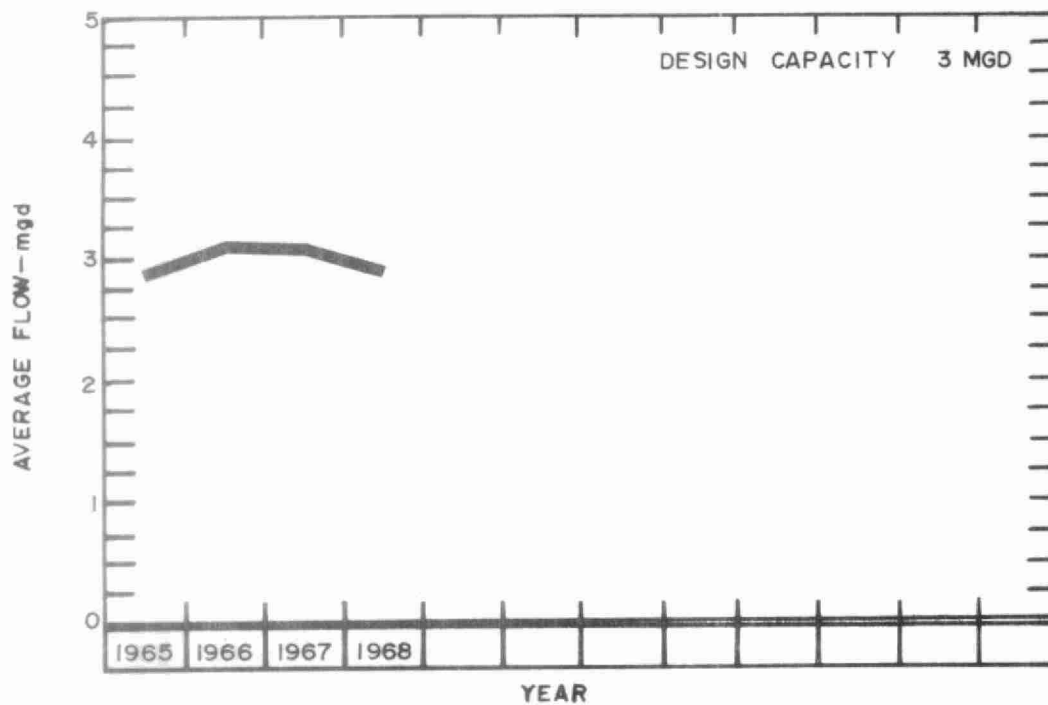
Process Data

The average daily flow for the year was 2.93 million gallons compared with 3.14 million gallons in 1967. During the year, the average design plant flow of three mgd was exceeded approximately 45 percent of the time compared to 62 percent in 1967. However, the plant's maximum or wet weather design capacity of nine mgd was not exceeded at any time during the year.

The plant effluent was chlorinated from May 15 to October 31 and a total of 34,390 pounds of chlorine was used. This represents an average dosage of 7.7 mg/l which was sufficient to maintain a minimum residual of 0.5 mg/l in the effluent.



F L O W S

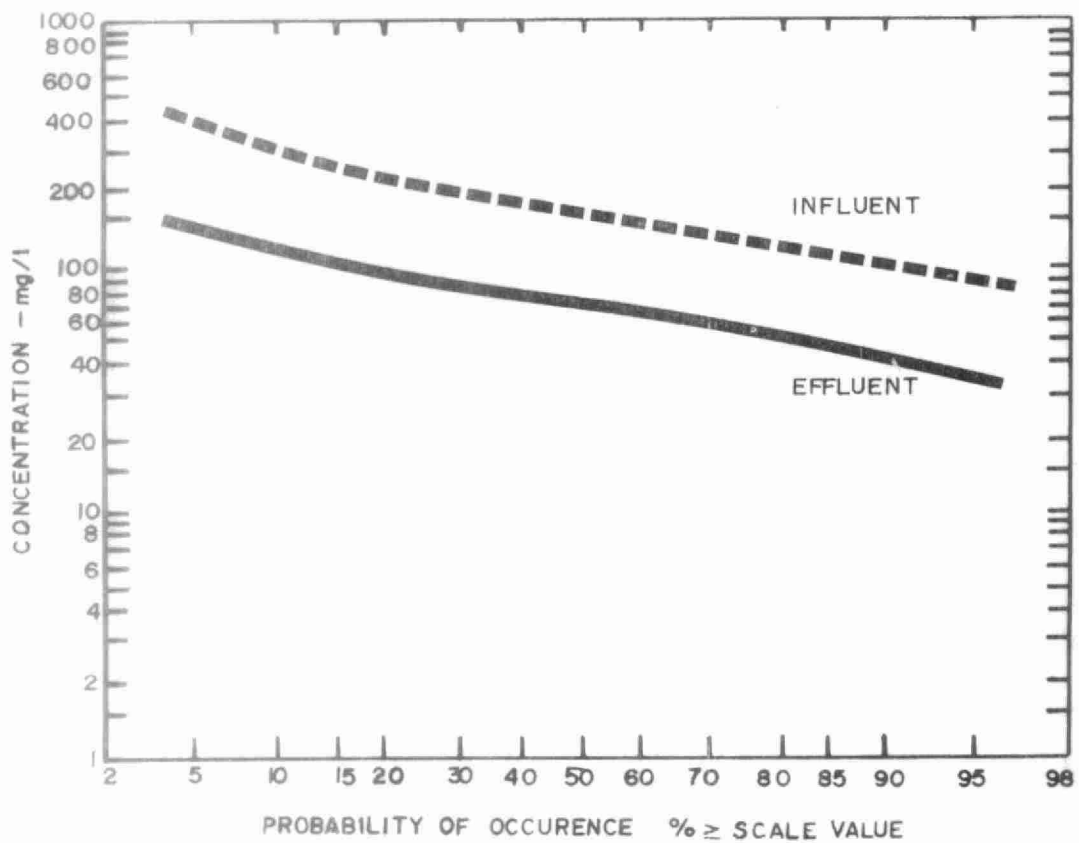


PLANT FLOWS and CHLORINATION

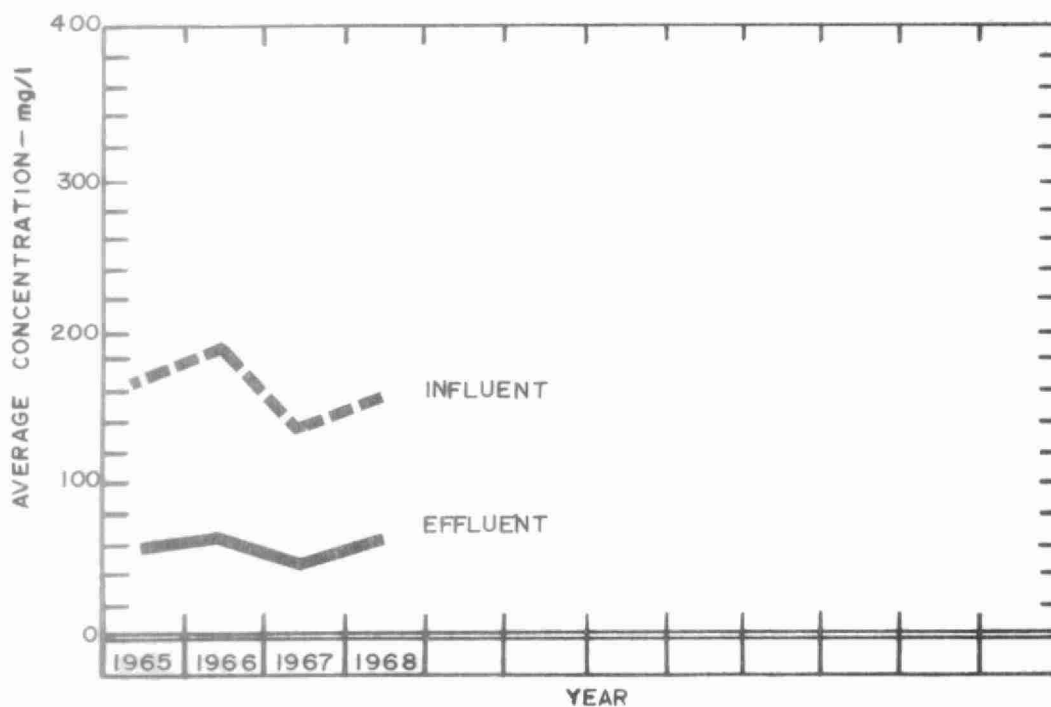
MONTH	TOTAL FLOW mg	AVERAGE DAILY FLOW mg	MAXIMUM DAILY FLOW mg	MINIMUM DAILY FLOW mg	CHLORINE USED 10 ³ lbs.	DOSAGE mg/l
JAN	68.36	2.20	2.78	1.52	0	0
FEB	o/s	o/s	o/s	o/s	0	0
MAR	91.60	2.96	4.34	2.25	0	0
APR	101.40	3.38	3.80	2.66	0	0
MAY	77.50	2.50	4.30	1.64	* 3.15	4.1
JUN	96.96	3.23	4.66	2.36	6.15	6.3
JUL	115.66	3.73	5.99	2.22	6.74	5.8
AUG	** 80.82	2.61	3.87	2.04	6.72	8.3
SEPT	76.86	2.56	3.50	1.64	6.31	8.2
OCT	77.70	2.51	2.81	2.07	5.32	6.8
NOV	70.55	2.35	2.80	1.64	0	0
DEC	76.42	2.46	4.69	1.17	0	0
TOTAL	933.85	-	-	-	34.39	-
AVERAGE	-	2.93	-	-	6.88	7.7

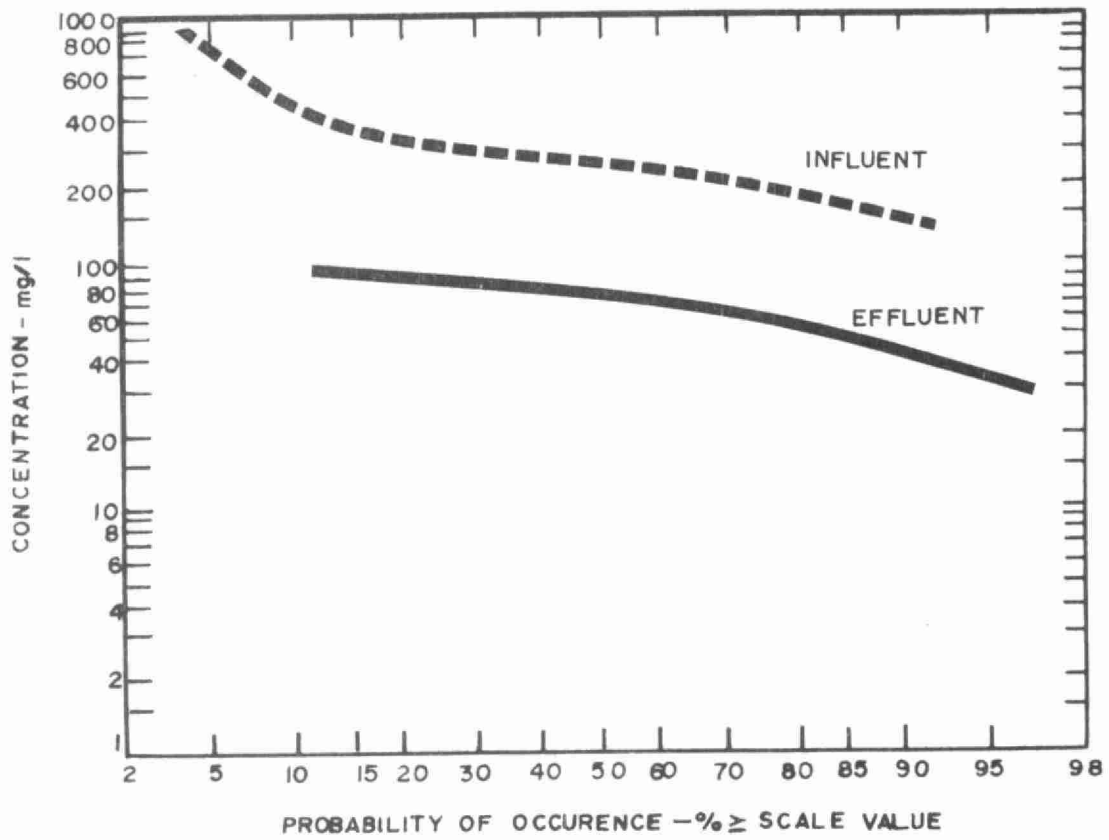
* Chlorination for 16 days.

** Prorated on data for 18 days.

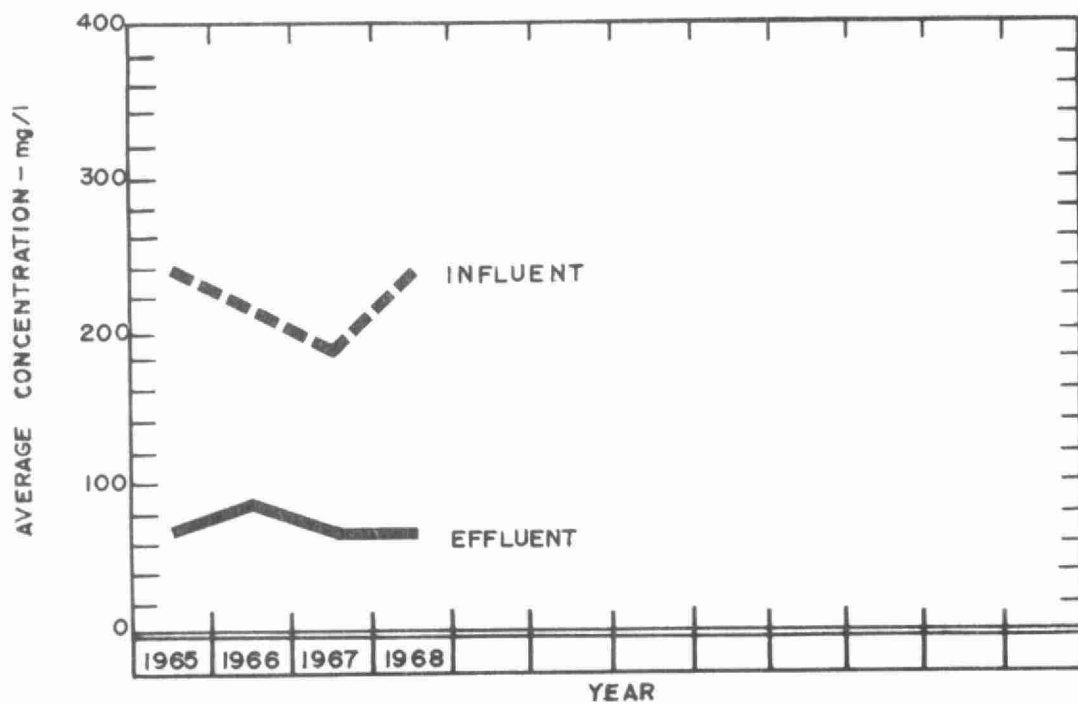


BIOCHEMICAL OXYGEN DEMAND





SUSPENDED SOLIDS



PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT
	INF CONC ^N mg/l	EFF CONC ^N mg/l	RED ^N %	REMOVAL 10 ⁵ lb	INF CONC ^N mg/l	EFF CONC ^N mg/l	RED ^N %	REMOVAL 10 ⁵ lb	REMOVAL ft ³
JAN	164	50	70	.78	223	58	74	1.13	289
FEB	155	56	64	-	173	72	58	-	382
MAR	115	90	22	2.29	238	79	67	1.46	296
APR	158	35	78	1.25	152	61	60	.92	204
MAY	146	48	67	.76	193	59	69	1.04	255
JUN	140	68	51	.70	136	56	59	.77	424
JULY	128	69	46	.68	252	61	76	2.21	519
AUG	190	55	71	1.09	378	65	83	2.53	158
SEPT	132	58	56	.57	326	40	88	2.20	210
OCT	248	99	60	1.16	393	54	86	2.60	126
NOV	175	87	50	.62	230	81	65	1.05	121
DEC	150	60	60	.69	150	60	60	.69	214
TOTAL	-	-	-	-	-	-	-	-	3198
AVERAGE	158	65	59	.96	237	62	74	1.51	267

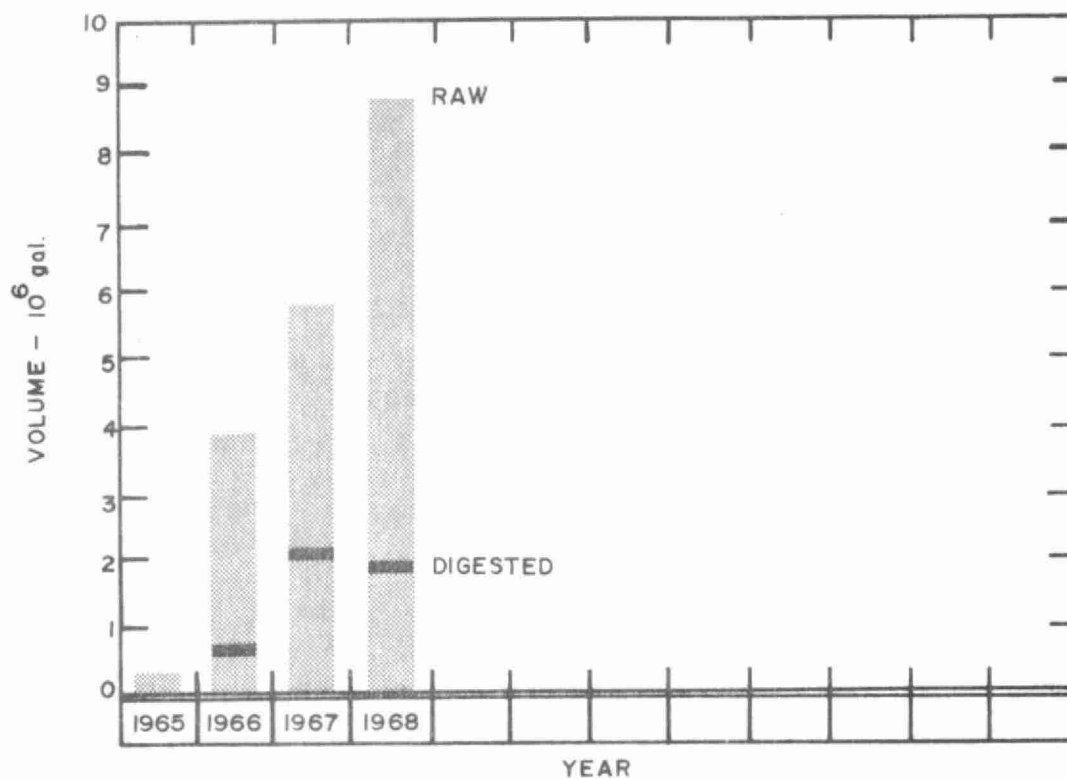
COMMENTS

The average BOD concentrations of the raw sewage and final effluent were 158 mg/l and 65 mg/l respectively. These concentrations represent a BOD reduction of 59 percent which indicates a very good removal efficiency for a primary treatment plant.

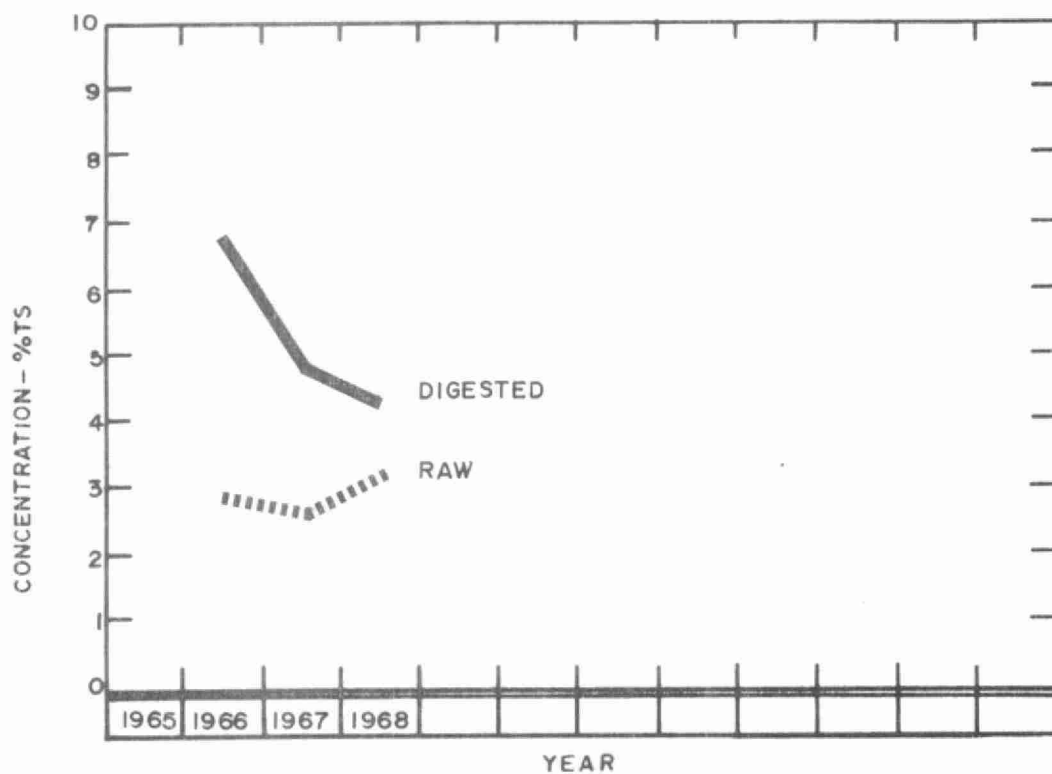
The average suspended solids concentrations of the raw sewage and final effluent were 237 mg/l and 62 mg/l respectively which represents a reduction of suspended solids of 74 percent. This reduction is very good for a primary treatment plant, where expected suspended solids removal is between 60 percent and 65 percent.

During 1968 an average of 38 tons of BOD and 75.5 tons of suspended solids were removed from the raw sewage per month.

A total of 3,198 cubic feet of grit were removed from the raw sewage. This total represents an average of 2.9 cubic feet of grit per million gallons of sewage treated.



DIGESTION



SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME 10 ⁵ gal	T. S. %	V. S. %	VOLUME 10 ⁵ gal	T. S. %	V. S. %	VOLUME gal	T. S. %	LIQUID yd ³	DEWATERED yd ³
JAN	5.29	2.3	-	1.66	2.5	-	-	.2	986	0
FEB	4.87	1.6	-	1.50	3.6	-	-	.2	893	0
MAR	5.21	-	-	1.48	-	-	-	-	876	0
APR	5.04	3.9	-	1.65	6.9	-	-	.2	978	0
MAY	5.21	4.8	-	1.57	3.1	-	-	.1	932	0
JUN	9.25	-	-	1.78	-	-	-	-	1055	0
JUL	8.93	-	-	1.74	-	-	-	-	1032	0
AUG	9.72	3.8	-	1.48	7.5	-	-	-	859	0
SEPT	8.64	-	-	1.43	-	-	-	-	847	0
OCT	8.93	3.0	-	1.67	-	-	-	-	862	0
NOV	8.64	3.3	-	1.43	1.9	-	-	-	837	0
DEC	8.93	-	-	2.39	-	-	-	-	1418	0
TOTAL	88.66	-	-	19.78	-	-	-	-	11575	0
AVERAGE	7.39	3.2	-	1.65	4.3	-	-	.2	965	0

COMMENTS

A total of 8,866,000 gallons of raw sewage was pumped to the digester during 1968. A total of 1,978,000 gallons of digested sludge was hauled. Gas production was low. The addition of mixing equipment would improve the digester operation.

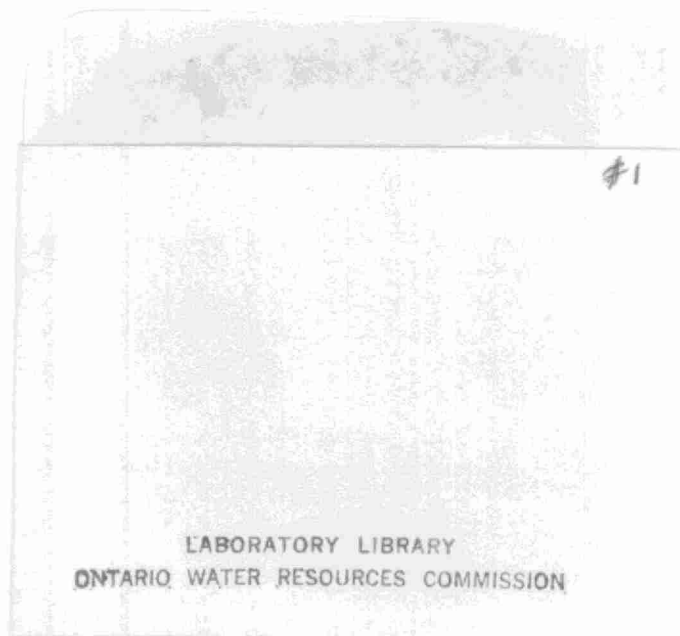


CONCLUSIONS

The plant operated satisfactorily and provided very good reduction of BOD and suspended solids. Digester operation can be improved.

RECOMMENDATIONS

A digester mixing system should be installed to increase the efficiency of the digestion process.





Water management in Ontario